



JOINT DEPOT MAINTENANCE ACTIVITIES GROUP
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MEMORANDUM FOR USAMC/AMCLG-LM (R. PIERATT)
COMNAVAIRSYS/COM/AIR-6.1.3.1 (C. MOELLER)
COMNAVSEASYS/COM/SEA-04A (R. ARELLANO)
HQ AFMC/LGPY (M. APONTE)
COMMARCORLOGBASES/Code G320 (J. WOLFE)

FROM: JDMAG/MA

SUBJECT: Best Business Practices

1. Reference JDMAG memo 23 Jul 99, Best Business Practices. Referenced memo requested updated revisions, additions and/or deletions on the best business practices information from the Services. The attachment reflects the updated information provided to JDMAG by the Services. The NAVSEA section is currently under construction and will be provided at a later date. Request your comments/concurrence regarding your Service section be provided by 14 Jan 00. Upon receipt of all concurrences, we will update the information on the JDMAG web site.
2. The JDMAG point of contact is Mr. Paul Charron, JDMAG/MAW, DSN 986-2778, or commercial (937) 656-2778.

Attachment
Joint Service Best Business Practices

cc:
USAMC/AMCLG-LM (R. Nameth)
NAVAIR/AIR-6.1.3.3.1 (A. Lopez)
COMSPAWARSYS/COM/SPA-04L (CAPT Graham)

Joint Service Best Business Practices

Army

Earned Value Project Management
Material Management Initiative (Parts and Supply)
Installation Supply Activity (ISA) Reduction
Fleet Assistance, Support and Technology Transfer
Quality Control Data System (QCDS)
Activity Based Costing Acquisition
Contractor Performance Certification Program (CP2)
Data Collection System
Depot Logistics Business Systems Modernization

Air Force

Designation of the McClellan Nuclear Radiation Center (MNRC) as a
Participating Industrial Facility (PIF)
Competition
Agile Logistics
Lean Sustainment Initiative (*Coming Soon!*)
Awaiting Parts (AWP)/Backorder Integrated Product Team
(IPT) Initiative
Action Workout (AWO)
Depot Maintenance Activity Group Macro Budget
Study on Commercial Metrics:

NAVAIR

Naval Aviation Depot Cherry Point

The Radio Frequency Asset Tracking Systems
Integrated Maintenance Concept (IMC)
Direct Vendor Delivery (DVD) / Prime Vendor Program (PVP)
Partnership with Industry and Partnership with Commercial
ISO 9000
Technical Data on Intranet
Loading and Scheduling of Work to Production Shops by Critical
Ratio and Geographical Area Codes
During FY99
Commodity Management
Digitized AV-8B Technical Publications
JEDMICS
MRPII

Naval Aviation Jacksonville

Practice Number 1 – Understand what it is that you are doing
(and want to do).
Practice Number 2 – Automate only those processes that make
sense.
Practice Number 3 – Incorporate Earned Value Management info
processes and systems.
Practice Number 4 – Continue to review, refine and re-engineer
the Business Process Model as required.

Naval Aviation Depot North Island

Programmed Depot Maintenance Scheduling System (PDMSS)
Direct Digital Controls (DDC)
Indirect Labor Tracking
Maintenance Management System (MMS)

NAVSEA

Advanced Industrial Management (AIM)
Facilities & Equipment Maintenance (FEM)
Tool Inventory Management Application (TIMA)
Pearl Pilot Program (I&D-Level Integration)
Laboratory Information Management System (LIMS)
Elimination of Cumbersome Work Practices
Engineering for Reduced Maintenance (ERM)
Competitive Cost Comparison and Benchmark Division
Safe-Acid Cleaning Process
Injury Tracking Best Practice
Injured Worker/Light Duty Placement Program

Marine Corps

Activity Based Costing
Budget Process Improvement
Business Process Improvement
Cost as an independent variable (CAIV)
Defense Contract Audit Agency (DCAA) Certification
Earned Value Measurement
Process Standards
International Standards Organization (ISO) 9000
Manufacturing Resource Planning II

Army Best Business Practices

Earned Value Project Management

The Army is instituting Earned Value Project Management, and it will encompass the entire scope of the maintenance process from strategic planning through program closeout. The goal is to increase confidence in plans, projections, forecasts, and execution data.

Material Management Initiative (Parts and Supplies)

This effort will streamline and standardize the process from the initial identification of the need for a part to the time that part is received. The primary focus is on reduction of turnaround time while meeting customer schedule, cost and quality requirements.

Installation Supply Activity (ISA) Reduction

This initiative will significantly reduce installation supply inventories and the DLA charges to the Army. There will be an increased reliance on the wholesale system for the receipt of supplies directly to the depot to reduce the number of DLA receipt and issue charges.

Fleet Assistance, Support and Technology Transfer

This effort involves a team of technical personnel travelling to installations to transfer good ideas and improve maintenance processes.

Quality Control Data System (QCDS)

This system would replace the Maintenance Inspection Data Analysis System (MIDAS). The QCDS will be more user friendly and eliminate the inspectors use of hard copies of defect characteristics, item description codes, work center tables, etc. Any depot with PDMSS can use this system by establishing appropriate databases. The goal is to shorten the data entry time and relieve frustration for the inspectors.

Activity Based Costing Acquisition

This business process will improve the acquisition process for parts to support maintenance programs. Acquisition may be through local procurement, national inventory control point (NICP), through credit card purchase, or Automated Storage and Retrieval System (ASRS) delivery of non-bulk material.

Contractor Performance Certification Program (CP2)

Depots, in conjunction with their participation in the CP2, have moved toward an ISO 9000 based Quality Management System (QMS). This effort aligns the depots with the commercial sector quality thrusts.

Data Collection System

The Army is in the third year of a multi-year effort to provide Army maintenance depots with a state-of-the-art electronic Data Collection System. The system is being contractor-developed as a front-end, bar-coded input, web-based system that will support either legacy or commercial systems.

Depot Logistics Business Systems Modernization

The Standard Depot System will be technically updated to replace government-developed databases and user interfaces with modern relational databases and graphical user interfaces. This will provide immediate benefits to users and facilitate incorporation of commercially developed software into future systems at the depots. Longer range, the Army Materiel Command (AMC) Wholesale Logistics Management System initiative will modernize the wholesale logistics processes and associated information technology.

Air Force Best Business Practices

Designation of the McClellan Nuclear Radiation Center (MNRC) as a Participating Industrial Facility (PIF)

Acting Secretary Peters has designated MNRC as a PIF, 12 Aug 98, as allowed under 10 U.S. Code, Section 2553 and made notification to Under Secretary of Defense, Acquisition & Technology (USD(A&T)) of the approval decision. The MNRC PIF will be a pilot project and will also fall under existing statutes for public-private partnering. The PIF allows the MNRC to sell articles and services to activities outside of DOD. The PIF will allow the AF to offset some of the operating costs of the MNRC, until final disposition has occurred. The AF declared the reactor as excess in Apr 96, with the disposal process to begin if not conveyed by beginning of FY2000.

Since the designation of the MNRC as a Participating Industrial Facility (PIF) on 12 Aug. 1998, there have been eight PIF agreements signed that are now in various stages of implementation. The eight PIF's are in the areas of neutron radiography, silicon doping, neutron activation analysis and medical isotope production. The revenues from these PIF agreements are just starting to be realized. With just this first year's effort it is estimated that 30% of the operational cost will be off-set.

Competition

Background

The Air Force has undergone extensive changes in the depot maintenance arena over the last seven years. In 1991, the Air Force instituted competition in an effort to reduce repair cost to the government while continuing to support the war fighter. Through this initial effort, the Air Force developed and instituted wide-sweeping changes in its approach to depot maintenance. The Air Logistics Centers (ALCs) were now competing against the private corporations for workloads that were normally "assigned" to them. The ALCs adapted quickly and won a majority of the workloads competed in the 1990-1991

timeframe. However, there was concern within the Department of Defense that the playing field was not level between the public and private sectors. As a result, the competition effort was put on hold until this issue was resolved. The ALCs updated accounting systems, implemented new time keeping processes, and initiated revised direct labor and material accounting practices in accordance with the Defense Contract Audit Agency's (DCAA) standards. As a result, the Air Force reinstituted competition, with Congress and DOD approval, in an effort to find the best overall source of repair for the workloads at the closing ALCs.

Competition Initiatives

Competition has allowed the ALCs to broaden their horizons in an effort to provide the best quality product at the lowest cost to the war fighter through the following initiatives.

Teaming with Industry

Through the FY98 Authorization Act, the government offerors were allowed to team with the private sector. This initiative has presented considerable benefits to the government as well as private industry. Teaming allows the sharing of experience and ideas between private industry and the public sector and also presents significant savings to the government. These savings are achieved through a reduced overall infrastructure, better use of the existing infrastructure, and reduced overhead costs. The combination of public and private experience and resources also presents exceptional opportunities to the DOD in the future.

Overhead Savings

Competition, regardless of the outcome (private or public) presents savings to the government in reduced overhead costs. The principle of economies of scale plays a significant role in the source selection process. Overhead savings on the C-5 contract represent \$153M of the total \$190.2M savings as a result of the award to WR-ALC. OO-ALC proposed \$253.1M in savings on the SM-ALC competed workload and OC-ALC proposed \$394M in savings on the Propulsion Business Area (PBA) competed workload. Both the public and private depots have somewhat fixed overhead costs that can be spread over a larger workload base if awarded the contract. This represents bottom-line savings to the customers and the DOD.

Labor Standard Reviews/Reductions

Through the competitive process, the ALCs have performed extensive reviews on current labor standards. These reviews, in many cases, have resulted in labor standard reductions. Further, the ALCs will review all labor standards on a recurring basis (at least once every 3 years).

Process Improvements

In an effort to reduce costs to be competitive with private industry, the ALCs have taken aggressive and innovative approaches to their repair processes. In the case of the C-5 competition, WR-ALC developed mobile tail enclosures to accommodate the large C-5 aircraft within the existing hangars. This not only allowed the ALC to remain competitive but also made the best use of the existing infrastructure within AFMC. In the SM-ALC competed workload, OO-ALC will implement several process improvements across the commodities workload that range from using automatic rewind machines for

the generator workloads to rearranging shop floors to reduce the flow of parts and personnel and make better use of industrial space. In the PBA competed workload, OC-ALC will bring workload, previously performed by a contractor, in-house at a significant savings.

Execution Tracking

A "side effect" of competition has been the increased scrutiny of the ALC's performance on the competed workloads. The ALCs must not only be competitive in the bidding process, but they must be able to perform in accordance with their proposal. In order to track this performance, the ALCs have made considerable changes in accounting practices and system software. The required monthly reporting allows the ALCs to identify problems as they arise. This timely identification of problems provides managers with the opportunity to resolve before the problem becomes unmanageable. This performance tracking not only assures savings to the customer, but also improves the perception of the government depots.

Summary

The initiatives above have already been proven as successful through the first round of competition and have continued to present savings to the customer under the latest competition efforts. The C-5 competition resulted in \$190M savings to the customer over a seven-year period, the SM-ALC competed workload \$638M over an eight-year period, and the PBA competed workload \$1.8B over a fifteen-year period.

Agile Logistics

To deal with new challenges and pressures for a more cost effective and efficient logistics system, the Air Force logistics community has developed a proactive response to significantly improve its logistics business. This effort is called Agile Logistics, which is becoming the standard business practice within the command. Agile Logistics is an Air Force program that includes a number of complementary initiatives, all focused toward improving operational capability by integrating and applying state-of-the-art business practices across all logistics functions and processes. The objective of Agile Logistics is to "maximize operational capability by using high velocity, just-in-time processes to manage mission and logistics uncertainty in-lieu of large inventory levels resulting in shorter cycle times, reduced inventories and cost, and a smaller mobility footprint." The exit criteria for these initiatives are the institutionalization of these practices as business as usual.

The key tenets of Agile Logistics are: (1) user control of customer mission requirements that drive the replenishment process (repair and supply), (2) tightening repair and manufacturing processes to minimize queue time and increasing our responsiveness to customer mission requirements; (3) developing innovations in contracting, requiring contractors to use Agile Logistics practices; (4) consolidated inventory, implement aggregated safety stocks to increase the protection for all of our customers; and (5) fast transportation everywhere, keeping assets moving and eliminating the wait time. The basic building blocks of Agile Logistics are the Repair Enhancement Programs (REPs). There are three REPs that form the foundation for Agile Logistics: Depot Repair

Enhancement Program (DREP); Contract Repair Enhancement Program (CREP); and Aircraft Repair Enhancement Program (AREP).

Depot Repair Enhancement Program (DREP)

DREP is AFMC's standardized depot repair process that supports exchangeable item repair. DREP employs Agile Logistics tenets with repair on demand, throughput focus, dedicated parts support on the shop floor, and the EXPRESS system to prioritize repairs. Quarterly negotiation of workload has been replaced with a daily customer demand-based system. Each day the customers' demands are prioritized, and within the constraints of funding, customer requirements are satisfied according to those priorities. DREP has been implemented at the three active Air Logistics Centers to the extent information/management systems development can support the process. Total implementation of DREP will be complete when information/management systems are fully implemented.

Contract Repair Enhancement Program (CREP)

CREP came into existence as part of the PACER LEAN and Lean Logistics programs to address downward trends in AF manpower, budgets and aircraft availability. It is the portion of Agile Logistics focused on improving the results associated with the contract repaired Depot Level Reparable (DLR) workload. CREP focuses on long term arrangements with industry, measuring performance and linking data systems. Under the new process, a team composed of all the needed players is formed for each contract, allowing the contract itself to be put in place much quicker. But most importantly, by focusing on reducing delivery times, the CREP contracts are able to provide more responsive support to the war fighters.

The road map for CREP was approved by the Logistics Process Configuration Control Board in early FY98 and contains three main elements. Those elements are Integrated Contract Repair Teams (CRTs), prioritization and distribution of repairs based on use of the Execution and Prioritization Repair Support System (EXPRESS), and electronic automation of the funding approval and purchase request process.

CRTs currently review contracts to ensure the tenets of CREP are included in contracts and to ensure that contractors understand and comply with them. The implementation of EXPRESS is enhancing our ability to forecast repair requirements to better size contracts that minimize inventories, ensure only the correct parts are ordered and reduce overall costs and response times. The third element is the electronic automation of the requirements/funding process, which is being accomplished as quickly as systems can support the effort. The three elements combined will result in supporting Command goals of reducing the overall logistics footprint.

Aircraft Repair Enhancement Program (AREP)

AREP is an initiative to reengineer and institutionalize the processes and procedures that govern aircraft Programmed Depot Maintenance (PDM) and modification operations. The AREP initiative is comprised of processes and procedural, organizational, and systematic operating elements. A major element of AREP, the Weapon System Support Center (WSSC), is a multi-functional, one-stop, forward-located organization providing support to the mechanic working the aircraft. The WSSC is capable of providing, or

coordinating with back shops and supply organizations, all logistics-related support to the mechanic for programmed (PDM) and unprogrammed depot level maintenance (UDLM), scheduled modifications, and satisfying unpredictable aircraft repair requirements. Specialized WSSC functions and positions provide an integrated approach to aircraft production support that fully synchronizes production management, planning, scheduling, and resource (materiel, equipment, manpower, routed repair, and facilities) programming, budgeting and execution to a specific aircraft per a specific operation-level production schedule.

Full implementation of AREP will reduce aircraft flow days thus increasing the velocity at which aircraft move through the depot PDM and modification process. The net results are fewer aircraft in work at the depot, making more aircraft available to the war fighters to perform their missions, and reduced customer prices for depot work performed.

LEAN SUSTAINMENT INITIATIVE (*Coming Soon!*)

The Lean Sustainment Initiative (LSI) is a jointly sponsored Air Force Research Laboratory (AFRL), Massachusetts Institute of Technology (MIT) and the Air Force Materiel Command (AFMC) effort. The goal of the initiative is to help design and implement a responsive and agile combat support system for the Air Force into the 21st Century. To achieve this goal, the sponsorship will bring together the Air Force stakeholder community in a forum to allow the identification issues of common concern, as well as solutions and best practices that may be available.

The scope of LSI is to exploit "Lean" concepts/practices that have been found successful in industry and government to the industrial operations/depot maintenance. This effort should result in the creation of a consortium of government, industry and academia partnerships to research and implement the lean practices and concepts through pilot projects. The LSI emphasizes voluntary participation by the sustainment stakeholder community, but stakeholder participation will be backed up by a commitment of monetary resources to fund research efforts.

The LSI is in its early planning stages, but is continuing to evolve through an effort of awareness and understanding. Current research tracks that were established as a collaborative relationship with MIT and the lean logistics enhancement programs will continue. In addition, other related studies and projects will be highlighted to allow the stakeholders to take advantage of any on-going or past efforts that may be applicable for their journey down the road to the lean experience.

Awaiting Parts (AWP)/Backorder Integrated Product Team (IPT) Initiative

An AWP condition exists when a part is required, not available, and a backorder is placed in the supply system for the required asset. In AWP situations the maintenance shop may be forced to either postpone the current repair operation and work on something else, or stop repair action completely. Among the adverse impacts resulting from the lack of adequate and timely piece-part and subassembly support is failure to meet depot overhaul schedules and to provide a timely supply of serviceable reparable items. AWP also increases the cost of depot level maintenance because of disruptions to production (i.e. work stoppages and rescheduling), the introduction of workarounds, such as

cannibalization and rob-backs and increased facility requirements. Moreover, the inventory investment in more expensive depot level repairable components is frequently higher than it should be as a result of the extended repair cycle times caused by AWP piece-part and subassemblies.

HQ AFMC/LG has formed an AWP/backorder IPT to resolve the causes of AWP/backorders to depot maintenance. Objectives: The objective of this IPT is three fold: (a) to establish a standard method for collecting and reporting AWP and backorders for organic and contract DMAG; (b) analyze the data with the help of the Air Logistics Centers (ALCs) to determine the causes and develop, with the help of the ALCs, alternatives and options for eliminating or reducing to an acceptable level the causes; and (c) implementing the recommendations.

An additional goal of objective (a) is to ensure the centers are correctly using the Inventory Tracking System (ITS) to track actual shop flow days and the subcategories of labor time, AWP, and other delays. This important metric will be used to measure the average length of time assets are in AWP and their contribution to average total shop flow days.

Once all objectives are met the IPT would disband. AWP and backorders would continue to be monitored by the DMAG and SMAG business areas as a normal business process.

The IPT is currently in progress.

Action Workout (AWO)

Action workout (AWO) is a very highly visible and highly supported process re-engineering effort. It targets one process at a time to eliminate waste/streamline the process. AWO is a 5-step process.

Step 1 is to identify the opportunity. A candidate process must have opportunity for reduction in cost, defects, waste, or overall cycle time and where significant gains in efficiency can be made.

Step 2 is a site visit and pre-work. A facilitator team visits the process-owning organization and provides AWO concept training to the owners of the process under scrutiny. The facilitators will also become familiar with the process under scrutiny in Step 2. During this step, critical path for the process is identified and key sub tasks for improvement are targeted. The facilitator team can be from a headquarters, a contractor, or a local organic team.

Step 3 is unit preparation and data review. The primary role of this step is to collect data on the process to establish a baseline and metrics by which future improvements can be measured--driving a stake in the ground. Data collection may include video taping/observing/diagramming the existing process to do this. Data collection phase typically lasts 2-3 weeks.

Step 4 is the actual AWO event. It lasts only 5 days. This is the high energy step where the process owners attack waste in the process by eliminating non-value

added steps and creating innovative changes that radically reduce the cycle time. To elevate the leverage for change, systems engineers, technical order change authority, and HQ functional policy authority all need to be present/available.

Step 5 is completing follow-on actions. A list of actions not completed in 5 days should be given to senior management for follow-on action within 30 days.

Action workout targets specific areas of waste, including over-production, queue/wait time, transportation and conveyance, redundant processing, excessive inventory, unnecessary motion, and rework. Overproduction refers to excessively stringent requirements—a six foot book shelf supported by 2 x 4s every 12 inches.

A successful action workout requires some commitment from senior management. Once a process is targeted, senior management ensures that all needed resources are available to the AWO team. The senior person in the organization needs to visibly support the effort and be available for some meetings during the AWO event week for some briefings.

Depot Maintenance Activity Group Macro Budget

In past years, the budget has been built by the centers from a detailed bottoms up process. There are many changes (often significant) to the budget estimate after the centers' submission to HQ AFMC and the Pentagon. It is difficult and laborious to make adjustments from the macro level down to the detailed level. Therefore, in an effort to improve the efficiency of the budget process, the FY2001 Amended President's Budget Submission for DMAG was built at the Macro, HQ AFMC, level. The budget was built using historical data, center Workload Review data, and other information provided by the centers. The budget estimate has been briefed to the Air Staff and OSD with good results.

Study on Commercial Metrics:

HQ AFMC/LGP personnel in conjunction with the Air Logistics Centers (ALC) studied metrics from world-class companies. This assessment included examination of private sector business measures and whether the same type of metrics are applicable to DMAG operations. Visitation to private sector businesses is now complete. Data analysis and verification of what was learned is underway.

NAVAIR Best Business Practices

Naval Aviation Depot Cherry Point

The Radio Frequency Asset Tracking Systems

This method of tracking Ground Support Equipment (GSE) throughout the NAVAVNDEPOT is made up of three elements, a radio frequency identification tag called TyTag, an Interrogator that gathers data, and an RF Link or reader which acts as a relay unit, relaying the data to and from a central computer. This system will allow the depot to know the location of any piece of rolling GSE within the boundaries of the installation; will eliminate wasted man-hours spent searching for equipment requiring preventative maintenance; and will eliminate man-hours spent locating equipment for critical jobs or work stoppages

Integrated Maintenance Concept (IMC)

A Reliability Centered Maintenance (RCM)-based concept to:

- Eliminate Aircraft Service Period Adjustment (ASPA).
- Base Preventive Maintenance (PM) tasks including Standard Depot-Level Maintenance (SDLM) on RCM logic, eliminating unnecessary tasks while maintaining required level of safety.
- Efficiently execute all PM tasks, O-, I-, and D-level maintenance by eliminating redundancies.

The objectives are to reduce SDLM cost, improve aircraft material condition, and improve ability to predict and level load depot workload.

Direct Vendor Delivery (DVD) and Virtual Prime Vendor (VPV)

These programs are designed to increase reliance of material management and delivery upon the Original Equipment Manufacturer (OEM) or other commercial partner. Benefits are expected in: reduced inventory requirements and cost; reduced material delays; reduced material management cost; improved workload projection; and improved relationships/partnerships between organic and commercial activities.

The advantages and disadvantages of using these methods of supplying parts to maintenance activities and operating squadrons are being researched. A proposed alliance with industry in maintaining Ground Turbine Starters/Auxiliary Power Units (GTSs/APUs) is being examined which will use DVD. Representatives on the Business Process Reengineering Teams are examining process improvements to include DVD and VPV.

Partnership with Industry and Partnership with Commercial

Programs designed to develop stronger business ties between organic and commercial activities. The goal is to integrate the best characteristics of each in order to provide a better, cheaper, and faster product to the fleet.

The depot and Honeywell International, Inc. have entered into a teaming agreement for the rework of C-2, P-3, S-3, and F-18 aircraft APUs.

Under the terms of the agreement, the depot and Allied Signal are jointly benchmarking rework processes (i.e., quality, manufacturing, material support, etc.). The goal of the teaming agreement is to streamline and optimize rework processes at each activity, thereby reducing total APU rework cost.

In addition to process improvement, the two activities will partner to meet Navy Inventory Control Point APU rework contract requirements. The depot will provide world class APU rework services, and Allied Signal will provide the best commercial practices for APU material (forecasting, procurement, and stocking) and transportation services.

This effort is dependent on Naval Inventory Control Point (NAVICP) letting a sole source contract to Allied. The contracting effort is currently in process.

ISO 9000

This quality management system was fully implemented in November 1999 for the entire NAVAVNDEPOT, making it the first major DOD facility to be registered to ISO 9000.

Technical Data on Intranet

This technical publication test WEB site has been established on the depot's Intranet. A prototype of three digitized publications to provide on-line technical publications through the Intranet Web Page was successful. The Technical Data Web site provides a means to evaluate proof-of-concept for managing, updating, and distributing technical publications electronically within the depot. This method allows the depot to access one site for on-line digitized technical publications. In FY00, projected technical publications made available will include AV-8B, General Series, CH-46 and CH-60.

Loading and Scheduling of Work to Production Shops by Critical Ratio and Geographical Area Codes

The depot has greatly enhanced its ability to load and schedule work more effectively by sorting it by individual geographical area codes assigned to shop work centers. The work is additionally sorted by the critical ratio, based on the time remaining versus labor hours required. The master data records now include a geographic area code for every line operation to be performed. The Workload Control Center computerized shop reports are now sorted by these geographic work centers, and each operation is listed in descending order of criticality. This also provides the shop supervisors and production controllers the daily queue of work at each work center. Capacity of the individual work centers can now be analyzed and adjusted on a daily basis to compensate for changing workloads. Fluctuations of work can be analyzed by the planners to ensure more even scheduling and flow of work into the depot and shops can analyze fluctuations of work. Adjustments within depot control, such as manpower, equipment, and number of shifts can be made much more quickly and accurately based on this data and these reports.

During FY99

During FY99 the Process, Component and Repair Branch underwent a substantial change to better serve our internal and external customers. All industrial processes involving painting, cleaning, stripping, fiberglass, composite and rubber were consolidated into this branch, which is responsible for providing support to all the programs in the depot. With declining resources, the branch had to restructure itself to meet the needs of all the customers, while decreasing turnaround time (TAT). Keys to the success have included:

- Flexibility: We now move employees to the process rather than moving the process to the employee which saves route time and often decreases TAT.
- Technology: Several improvements have resulted in minimizing touch labor which allows us to make use of our personnel resources while decreasing TAT.
- Communication: With all these industrial processes under common management, we are better able to foster a team approach, provide cross-training opportunities and learn from each other.

Commodity Management

In every industrial business operation, there exist various overlapping functions and responsibilities. To identify these overlapping areas usually generates opportunities for business practice improvements. These improvements come in many forms but are generally proved out by financial payback and the enhancement of process consistency.

The depot recognized common requirements of various commodities being managed by various divisions within the depot. Also noted were the unique and independent methods of management being used to control these commodities. The commodities include but not limited to:

- Hazardous Materials (HM)
- Special Support Equipment (SSE)
- Individual Material Readiness List (IMRL) equipment
- Tools

Some key requirements of these commodities are:

- They require corporate and specific information management systems control (TIMA, HMMS, SERMIS, MANAGE FACILITIES, FEM).
- They require oversight of functional data integrity.
- Distribution and collection of products is required.
- They require 100 percent serialization (non-consumable).
- Temporary need/usage by production is typical.
- They require shelf life testing, calibration, and/or periodic maintenance as well as associated record keeping.
- They are governed by external laws, rules, and/or regulations.

With the development of the Regulated Commodities Division, the depot consolidated all areas of administrative management onto one "Cell Group" utilizing "choke point" inventory management as the front line of commodity control. In this consolidation, the depot tapped the program management expertise from the different divisions to oversee all of the areas of operations (procurement, inventory management, data management,

product distribution, etc.) within this one division. The key to total control, however, lies within the distribution management oversight of all of these commodities within the production areas. The depot consolidated tool rooms, HAZMAT centers, and SSE rooms to form the Regulated Commodities Distribution Branch. All of the tools required to effectively manage these commodities now reside in one division. Recent accomplishments include:

- Current rewrite of all applicable NAVAVNDEPOT instructions.
- Development of all Regulated Commodities Specific Program Standard Operating Procedures (SOP)
- Integration of overlapping duties (procurement, inventory management, distribution)
- Budget consolidations and visibility
- Single source inventory ownership
- Inventory reductions
- Single source of program expertise
- Procedural and data consistency
- Enhanced customer services

The largest potential for additional improvement lies in the further consolidation of the distribution areas. By cross-training current distribution employees in all aspects of the various commodities, the depot can eliminate the need for multiple distribution points in certain buildings, and reduce the amount of required distribution staffing overall, as well as overtime support man hours expended to support production.

Digitized AV-8B Technical Publications:

The AV-8B program initiative digitized 350 technical publications. The technical publications are made available through a local web site. Engineers are currently using the technical publications, and the policy allowing view capability to the depot shop personnel is in process.

JEDMICS

The Joint Engineering Data Management Information and Control System (JEDMICS) is an engineering data distribution system that allows technical drawings to be viewed on the desktop PC of a technical library customer vice the customer having to walk to the central drawing files to retrieve the drawing(s). The workload of the Technical Library will eventually decrease with a known cost avoidance in labor and materials. Presently, this system has 396 active users with the majority of the users in the logistics and engineering competencies. Development of controls and policies are in process to extend the users to the depot production areas. An additional 400 users are projected for FY00.

MRPII

Manufacturing Resource Planning II (MRPII), a business initiative that will improve our processes, is being implemented. To date, MRPII functional training has begun, criteria to allow for identification of alternate parts has been developed, business processes and training packages are in process, and required interfaces have been developed.

NADEP JAX

Practice Number 1 – Understand what it is that you are doing (and want to do).

NADEP JAX has done an “AS-IS”/”TO-BE” analysis of its business and has developed a Business Process Model.

The Business Process Model

“Perform Depot Maintenance” is comprised of six processes: “Perform Business Planning,” “Manage Depot Finances,” “Plan Production,” “Manage Resources,” “Execute Production,” and “Support Operations.”

A1 Perform Business Planning

"Perform Business Planning" defines all portions of the Depot Maintenance Business Plan, which expresses the long-range Depot Maintenance direction and required resources. This activity improves coordination of strategic initiatives, resource plans and capability requirements in the depot and subordinate organizations. These improvements are assured through a proactive approach to strategic forecasting and the establishment of a single point of customer interface.

This process examines numerous aspects of depot operations including quality reports, financial reports, and cost/schedule status reports, etc., to ensure the proper planning of depot maintenance business. As a result, strategic planning report parameters are provided to support the identification of improvement opportunities.

A2 Manage Depot Finances

"Manage Depot Finances" analyzes, reviews, and controls those elements that contribute to the financial status of depot maintenance. This process examines and analyzes various aspects of depot financial administration to ensure the proper management of depot finances and to develop the depot operating budget. The depot operating budget is provided to control activities within the depot, and information related to the budget is provided for use in other depot maintenance activities. Manage Depot Finances is comprised of four sub-activities: "Develop Budget," "Perform Funds Administration," "Manage and Report Revenue and Expenses," and "Collect Financial Data."

A3 Plan Production

This process creates a detailed breakdown of customer-authorized work and develops, maintains, and schedules a single integrated plan for production. Note: Engineering decisions and industrial engineering will be included when the technical authority is vested in depot maintenance. This is an iterative process that: develops high-level feedback and direction for business planning to evaluate potential workloads; develops more detailed plans and schedules to support negotiations for targeted workloads; and manages risks and impacts to plans and schedules that support authorized work. Plan Production is comprised of three sub-activities: "Plan and Manage the Project/Product," "Plan Authorized Jobs," and "Develop Schedules."

A4 Manage Resources

"Manage Resources" ensures that facilities, tools/equipment, skills, and material are provided as efficiently as possible to meet the Gross Resource Requirements and Rough Cut Resource Requirements for specific project/product workloads. This process examines and analyzes information on available resources, as well as resource requirements to determine if resources can be provided. The resources are provided to support production execution, and information related to these resources is provided for use in other depot maintenance activities. Manage Resources is comprised of four sub-activities: "Manage Personnel Skills," "Manage Facilities," "Manage Tools/Equipment," and "Manage Material."

A5 Execute Production

"Execute Production" applies resources to the repairable item and converts or restores it to serviceable condition in accordance with production direction. This process uses the authorized project agreements (A1), production direction, proposed production and routing schedules from production planning (A3), and resources from resource management (A4), in order to produce a maintained item. The serviceable item is then sent to resource management (A4) to be delivered to the customer. Execute Production is comprised of four sub-activities: "Develop Proposed Operations Packages," "Assign Work," "Execute Operations," and "Manage Production Problem Resolutions."

A6 Support Operations

"Support Operations" provides general support to people, assets, and operations. The focus of this support is on managing quality and performance reporting, various compliance requirements (safety, environmental, etc.), administrative support (personnel, payroll, etc.), and information repository management, and information system infrastructure support.

Practice Number 2 – Automate only those processes that make sense.

NADEP JAX has incorporated the business practices of the American Production & Inventory Control Society (APICS) Manufacturing Resource Planning (MRP II), as implemented by Western Data Systems Compass CONTRACT software and the Project Management Institute (PMI) Project Management Handbook of Knowledge (PMBOK). These are the major tools in the suite of software used to run the depot. Other tools include:

- Interservice Material Accounting and Control System (IMACS)
- Laboratory Information Management System (LIMS)
- Naval Industrial Material Management System (NIMMS)
- Tool Inventory Management Application (TIMA)

Practice Number 3 – Incorporate Earned Value Management info processes and systems.

NADEP JAX has incorporated the business practices of Earned Value Management and has been certified in meeting the 34 assessment criteria of DoD 5000.2-R.

A sub-activity of the Business Process Model A6 - "Manage Quality and Performance" conducts performance measurements and utilizes Total Quality Management concepts to recommend and implement process improvements and enhance process standards. Conducting performance measurements involves aggregating and evaluating production data and financial reporting information to produce performance reports and Cost Schedule Status Reports in accordance with report parameters, the business plan, and the released master schedule.

Managing total quality uses strategic planning report parameters, financial reports, performance reports, current and historical production data, customer information, and the business plan to develop potential process improvement opportunities into recommendations that, upon approval from a higher authority, can be implemented and monitored for effectiveness. These process improvement recommendations are evaluated along with requests for standards development and corporate standards exception requests to decide which ones can be proposed to higher level depot or corporate authority. This would include locally prepared work instructions, inherent labor hours, and/or a unit of engineered data. Technical instructions to govern how a new process standard is accomplished will be developed as well.

Support Information and Reports, which include the Cost Schedule Status Reports, and quality reports assist in business planning (A1), financial management (A2) and production planning (A3). Support reports include performance reports which are provided to financial management (A2) and external recipients. Process improvement recommendations and external standards development requests are referred to a higher authority for approval. Process standards get incorporated in local Standards, Regulations and Directives (SRD) and are used in all aspects of the depot's business.

Practice Number 4 – Continue to review, refine and re-engineer the Business Process Model as required.

The depot's customers value quality, and they receive it; but they're also demanding lower costs, shorter cycle times, and a realistic picture of alternatives and risks. The depot must drive cost out of everything it does, and then clearly demonstrate those savings in a way that is meaningful to the customers. The depot has reached a transition point as an organization. The last several years have been spent on downsizing, reorganizing, relocating and redistributing workload. With the new structure in place, the depot can now focus on how the work gets done. This process effort will result in interaction with people across programs, functions, business units, and throughout the acquisition business, customers included. It will be a real eye-opener to all involved, and will result in stronger working relationships with customers and among depot personnel.

NADEP North Island

Programmed Depot Maintenance Scheduling System (PDMSS)

PDMSS is a full-featured project management system that includes people, processes, and tools. The PDMSS system allows baseline scheduling based on a work breakdown structure with automated, next-day updating of expenditures against the plan. This system includes an exceptionally robust resource scheduling capability in addition to variance analysis calculations. Perhaps the most important feature of PDMSS as a system is the ability of the planners and analysts to tailor the application to particular programs and workcenters. PDMSS has been a significant tool in the improved performance of this organization.

Direct Digital Controls (DDC)

DDC is an acronym used in the Industrial Planning Office at NADEP to indicate a planned effort to determine the actual usage of plant equipment. Currently, equipment maintenance is performed on a calendar basis rather than a machine usage basis. Additionally, the current maintenance scheduling system has serious problems. Some equipment (air handling equipment, autoclave) is currently instrumented and monitored. In FY99 the depot will install digital sensors on metal cutting equipment to determine maintenance requirements and usage rates. This information will then be used to more accurately schedule workload and calculate plant capacity.

Indirect Labor Tracking

Most organizations do not track the output of production support groups in terms of specific products. In selected areas, the NADEP has begun tracking the daily output of support groups by developing a menu of all the products produced in these groups and a list of all their customers. Each day, each individual completes a log indicating the time spent on each product and for what customer. This information is transmitted via individual PC to a server where the data is fed into a relational database. Ultimately, the daily expenditures of indirect funds can be assigned to very specific support products, with the obvious long term capability of making business decisions based on very specific data.

Maintenance Management System (MMS)

The Maintenance Management System was developed as a tool to support facility and equipment maintenance decisions. MMS is based on the commercial-off-the-shelf Maximo software currently being utilized in many commercial industrial facilities. MMS tracks equipment and facilities inventory, maintenance history, and labor and material expenditures and can be tailored to meet a variety of organizational requirements. NADEP, North Island is also using MMS to generate work orders for both scheduled and corrective maintenance, maintain a trouble call log, and update status on other projects within the Industrial Planning Competency. Over 100 users currently have varying levels of access to the system. We expect MMS to lower our overall maintenance costs by identifying underutilized equipment and equipment with excessive down time. MMS is currently being exported to the other Naval Aviation Depots at Jacksonville and Cherry Point. All three NADEPs will employ metrics generated by MMS to track progress against certain Business Process Reengineering initiatives.

NAVSEA

Best Business Practices

Advanced Industrial Management (AIM)

Advanced Industrial Management is the result of a re-engineering effort to modernize the Naval Shipyard business practices and automated information systems. Processes used in ship repair were examined and defined, centered on a project management business model. AIS applications and database were designed to integrate and streamline information flow and to allow direct sharing and reuse of planning products. In addition to providing reusable planning and technical information, AIM:

- Allows single data entry for downstream use
- Establishes a unique and disciplined work breakdown structure
- Tracks work from multiple customers and funding systems
- Tracks corporate-wide performance
- Integrates military and civilian time and attendance
- Offers a QA certification system
- Provides real-time work completion status

AIM NT is the software product used to plan and execute large projects within a formal project management process. The AIM Process and related suite of software products support more than 10,000 on-line users, and are used on projects as large as 800,000 labor-days of work. Naval shipyards have shown 4 years of continuing improvements in cost/schedule performance NAVSEA-wide since AIM products were installed. The 5% savings on one major CVN-72 availability paid for 33,000 labor days of additional work – all completed within the original work schedule. AIM is managed by the Navy Systems Support Group (NSSG), Portsmouth, VA.

NSSG has used a “Joint Application Development” (JAD) approach to gain customer involvement and buy-in at every phase of the software life cycle. While this approach may lengthen the time for analysis, it reduces coding time, eliminates rework, and improves coverage of testing and acceptance. It also allows a coordination of knowledgeable resources to represent user perspectives, manage customer expectations, and increase the probability of customer satisfaction.

NSSG’s efforts to improve cost, schedule and quality have resulted in its designation as a Software Engineering Institute (SEI) Capability Maturity Model (CMM) Level 3 organization. (Only 50% of software development organizations subscribe to the CMM philosophy and, of those, only 20% have reached CMM Level 3 or higher.)

Facilities & Equipment Maintenance (FEM)

The Facilities and Equipment Maintenance (FEM) system provides an on-line interactive tool for managing industrial property, transportation, plant, office and test equipment. The system tracks all costs associated with the procurement, installation, repair, construction and preventive maintenance of assets throughout their life cycle. The FEM system is based on the COTS product MAXIMO, and was selected by the Department of Defense as the standard system for managing and maintaining physical assets within

government Depot Maintenance activities. The FEM application is used extensively in the Naval Shipyards. The Navy Systems Support Group (NSSG) provides the program management for the development and deployment of the FEM application in three U.S. Air Force industrial depots and five U.S. Army depots.

Tool Inventory Management Application (TIMA)

The Tool Inventory Management Application (TIMA) provides improved management and control of tools and equipment. TIMA accomplishes this by automating tool issue, order, marking, calibration and maintenance tracking utilizing a COTS application. This COTS product, Automated Tool Inventory Control and Tracking System (ATICTS), was selected by the Department of Defense as the standard system supporting tool inventory management for government Depot Maintenance activities. TIMA provides significant benefits to facilities through improved tool control, compliance with Foreign Object Damage (FOD) control, tracking and control of nuclear-contaminated tools, tool history/repair/calibration/warranty tracking, and more accurate inventory balances. The Navy System Support Group (NSSG) provides program management and product support to four Naval Shipyards, five Army, five Air Force, and three NAVAIR depots.

Pearl Pilot Program (I&D-Level Integration)

In 1998, the decision was reached to consolidate the Pearl Harbor Naval Shipyard (PHNSY) with the Pearl Intermediate Maintenance Facility (IMF) and convert to Mission Funding during the period 1 October 1998 to 1 October 2000 and evaluate the results. Starting 30 April 1998, overhead functions such as planning and engineering; quality assurance; comptroller; occupational safety, health and environmental; and administration were combined. Similarly, machine, shipfitter and electrical shops; crane and rigging; and calibration lab were “singled up.”

Standard operating procedures were created to take advantage of software capabilities and to standardize business processes between the two culturally disparate activities, and NSSG assisted with this process-re-engineering effort. Enhancements to NSSG’s AIM Xpress, a simplified version of the AIM application used by naval shipyards for large projects, allowed the integrated activity to achieve many AIM benefits -- such as reusable planning products, a disciplined work breakdown structure, and real-time progress reporting -- while continuing to operate in the quick-turnaround IMF work environment. Eighteen software releases of enhancements provided by the three NAVSEA Systems Support Groups for four core applications of the Automated Information System (AIS) suite helped to reduce the number of workarounds.

The result: 4,008 people at this combined command now service 38 ships, which means 55% of the 1988-level workforce now maintains virtually the same number of ships as before.

Laboratory Information Management System (LIMS)

The Laboratory Information Management System (LIMS) is an implementation of Commercial Off-the-Shelf (COTS) applications product that is customized to meet the data handling/storage needs of each laboratory. The LIMS provides support exclusively to laboratory operations. LIMS is configured to support logging, tracking, testing scheduling and reporting for each of the different material types tested at each laboratory.

Master level information about each sample is entered into the LIMS either when the sampling event is requested or the material is received into the laboratory. Analyses are scheduled either automatically based on sample type or manually by laboratory personnel. Analytical data entry is accomplished either manually through X-terminals and PC's or automatically by interfaced laboratory instrumentation. When test data is input into the LIMS, limit comparisons are performed for routine tests with known numeric requirements, and out-of-limit conditions are flagged for the analyst. When all testing has been completed, detailed reports meeting the laboratories' requirements for distribution are generated. NAVSEA provides program management and product support to four Naval Shipyards and three NAVAIR depots.

Elimination of Cumbersome Work Practices

The Cumbersome Work Practices (CWP) initiative focusing on eliminating or streamlining technical requirements that are excessive, obsolete, or non-value adding in order to reduce repair and maintenance costs. The CWP effort is included in NAVSEA's Strategic Goal to reduce total ownership costs of our products. The CWP effort is specifically directed to eliminate/simplify non-nuclear cumbersome work practices, focus on ship maintenance and modernization, reduce costs without compromising valid technical requirements, institutionalize approved technical changes, and ensure that the information is passed to all NAVSEA platforms. The CWP scope includes work and practices on new construction ships and craft, and work in private shipyards.

There is a four-phase approach to the CWP process. The phases include: identify the technical requirements of the targeted item; debate the merit, validity, and effectiveness of the technical requirements of the targeted item; determine the best solution for the targeted item based on the technical requirements review; and once approved, implement document changes required for institutionalizing the change. Once the proposed document changes are determined, the CWP effort continues to track the documentation through the review cycle until the document is distributed to the Fleet for implementation. This complete approach has been effective in not only developing the change but ensuring the change is completely institutionalized in the Fleet.

The CWP Working Panel (CWPWP) is responsible for the technical review, issue resolution, documentation change development, and briefing to the Senior Review Board. All actions of the CWP process are focused by the working panel. The members of the panel transverse the NAVSEA organization.

Engineering for Reduced Maintenance (ERM)

Funding restrictions in acquisition programs have resulted in the selection of less expensive components or systems which have subsequently increased maintenance expense as ships and systems age. This has resulted in a high cost for maintenance which threatens the affordability of planned availabilities. A process was needed to merge high cost maintenance problems with applied technology to determine the best systems or processes to apply which would result in a lower life cycle cost, even if the proposed solution installation cost was higher than the current maintenance practices. The Engineering for Reduced Maintenance (ERM) process identifies those problems for which a solution exists and which are relatively simple to accomplish in order to focus efforts of the engineering technical community on high cost maintenance problems. The

primary goal of ERM is to ensure that the actions needed to correct specific high cost maintenance items are incorporated in all current and future Navy ship repairs and new construction.

Specific ERM steps are required to identify the fleet problems, determine the solutions and institutionalize the solution into current and future ships. An initial list of ERM items was established based on fleet input for specific NAVSEA effort. The best technical solution to the ERM items would be established by working with headquarters and field NAVSEA personnel, commercial industry, and other activities as appropriate. The technical solution would be translated into changes in general requirements documents including but not limited to GEN SPECS, MIL-SPECS and Standards, the DDGOS, the GSO, NSTMs and TRSs. The process ensures that each ship class and/or type has incorporated the technical requirements in ship specific documents such as Class Maintenance Plans and Overhaul Work Packages. Additionally, the process assures that each new construction ship has incorporated the technical requirements in individual ship specifications. Finally, appropriate fleet and NAVSEA personnel are notified on a periodic basis for input on problems with implementation and feedback, and for additional items for consideration.

Individual ERM working Groups composed of the personnel responsible for establishing the NAVSEA technical approach to correcting the problem and platform representatives meet at least bimonthly. The purpose of the meetings is to expedite identification, documentation, and testing needed to evaluate the best technical solution, and to translate that solution into requirements and ship specific direction. Individual ERM items that have been developed to the point that a technical solution is ready for fleet introduction are addressed by an ERM Working Group to review individual ship class interfaces as appropriate.

Well Deck Overheads: Installation of edge retentive, chemical resistant, heat resistant Sigma Edgeguard on entire well deck overheads on amphibious ships will eliminate all further maintenance for 10 years. This initiative affects 33 ships for a total savings of \$24 million in life cycle maintenance and 30,000 Sailor man-days over a 10-year period.

Anti-Stain Paints: Application of anti-stain paint on freeboards and superstructures will reduce or eliminate running rust problems, saving approximately 300,000 Sailor man-days per year fleet-wide.

Hand Tools: Procurement and distribution of state-of-the-art hand tools will allow Sailors to prepare surfaces more effectively and apply coatings with more ease.

High Durability/Wear Resistant Coatings: Qualification and application of high durability/wear resistant coatings in heavy traffic areas on weather decks, passageways and machinery spaces will save approximately 700,000 Sailor man-days per year fleet-wide. These coatings have three to four times the life span of current coatings.

Watertight Door Maintenance Reduction: Procurement and installation of improved doors (2500 interior retrofits; replacement of 2000 doors on weatherdecks) will save approximately 44,000 Sailor man-days per year fleet-wide.

Use of Composites to Reduce Corrosion: Procurement and installation of composites in corrosion-prone equipment and components will include deck grating, rope guards, ventilation screens, vent ducting, ladders, and cable hangers.

Bilge Preservation: Qualification of alternative suppliers of surface tolerant coatings for bilge preservation will reduce the cost of the product and improve its quality. Identification of improved surface preparation and coating application equipment will improve bilge preservation productivity and the quality of the bilge coating system.

Freeboard/Topside Coatings: Developing additional sources of anti-stain coatings will reduce procurement costs and increase availability to the fleet.

Ventilation Systems: Development, procurement and installation of improved disposable filters will reduce corrosion problems in ventilation systems, and result in reduced maintenance and replacement requirements.

Non-Skid Preservation: Installation of improved ultraviolet resistant non-skid deck coatings will extend service life and reduce the heat index in ships' interiors.

Hydroblast Systems: Procurement (lease, industry partnering or buy) of open/closed loop Ultra High-Pressure (UHP) waterjet (hydroblast) systems for removal of nonskid will result in significant savings in time and labor and a reduction of air and water contaminants.

Sealed Bearings: Replacement of open face bearings with shielded, sealed bearing on five horsepower and below motors will eliminate the need for periodic maintenance on the bearings and reduce the associated hazardous material (grease) stowage aboard ship.

Tank Monitoring Systems: Installation of tank monitoring systems that measure tank corrosion by monitoring changes in electric potential will help eliminate condition-based inspection and cleaning (as opposed to cleaning at regular intervals).

Mechanical Seals: Improved COTS mechanical seals for pump applications have a simpler design, require less labor for installation and replacement and have a longer service life.

Automated On Board Oil Analysis: COTS automated monitoring for in line wear debris and oil quality will replace the current labor intensive oil analysis (combination of onboard testing and ashore lab analysis).

Machinery Space Ventilation: Installation of a moisture separator/filter in main machinery and reactor auxiliary space supply ventilation. This reduces the corrosive

effects of grit and moisture, extending valve maintenance periodicity and reducing maintenance to switchgears.

Calibration Reduction: Elimination of time consuming and labor intensive calibration recall through complete review of requirements, elimination of excess requirements and conversion of valid requirements to PMS.

Preservation Teams: Preservation teams will take over responsibility for organizational-level "chipping and painting" preservation and maintenance work.

Competitive Cost Comparison and Benchmark Division

The Competitive Cost Comparison & Benchmark Division (Code 1250) at Puget Sound Naval Shipyard is a NAVSEA pilot program site that was formally established in July 1997 (fully staffed in January 1998) with the ultimate goal being to reduce total operating costs. The team provides a full range of services from providing cost estimates and other cost data to accomplishing cost comparison and benchmark studies to customers both internal and external to PSNS. They are encouraged to search for and pursue "out of the box" solutions and innovations to PSNS problems and processes. A basic tenet of Code 1250 is that the organization must interact and communicate with other existing PSNS process improvement related organizations and programs within as well outside PSNS successfully. Code 1250 was established with the ultimate focus of creating best value for the customer. Code 1250 primarily measures their value by their return on investment (ROI), which is the ratio of overall validated actual savings for PSNS and/or the customer to overhead funds used to pay wages. Since establishment and over the past two years, the Team has identified over \$20.5M in potential savings and \$4.5M in actual validated savings, which equates to about a 3 to 1 return on investment (actual saving /budget). Note, that while the estimated potential savings are based on Code 1250 recommendations, it is the various other PSNS shops and codes that execute the work that achieve the actual savings.

Safe-Acid Cleaning Process

The Safe-Acid Cleaning process uses water like, organic, salt solution with about the same environmental impact as vinegar. The product is designed to remove unwanted calcium based scale and sea growth and is used for cleaning all machinery and components that circulate water. It is envisioned that entire ships systems (including individual components) can be cleaned by circulating this cleaning solution through hoses attached to outside hull fittings while waterborne. Based on the cleanings done so far (with up to 84% cost savings over conventional methods), this process has the potential of saving hundreds of millions of dollars in tangible savings and even more in intangible savings (schedule impact) compared to current conventional processes if applied Navy wide. The cost saved represents increased maintenance and upgrades available for the fleet. Safe-Acid-Cleaning is an example of dramatic, breakthrough improvements that can be attained by finding and adapting existing Private Sector processes to naval community applications.

Injury Tracking Best Practice

The recently revised OPNAVINST P5100.23E, Chapter 14, requires that activities use a “standardized” injury classification coding system and electronic reporting methodology. On October 1, 1999, the INJTRAK program, as developed by PSNS for this purpose, was accepted for use Navy-wide. INJTRAK, with its’ superior capability for collecting and analyzing injury/illness data, was adopted to meet the Navy’s strategic goal of providing communication and information systems that rapidly disseminate information to all levels within a Command. INJTRAK’s capabilities for data collection and analyses have enhanced PSNS management’s knowledge of safety and health conditions in the workplace. INJTRAK offers a means for OSH organizations to provide meaningful injury/illness analyses using computer tools. The potential benefits of the INJTRAK program include: Providing naval activities rapid identification through data analyses of mishap trends allowing potential early hazard identification. Allows activities to be proactive in achieving safety first for employees. Achieving the Naval Occupational Safety and Health (NAVOSH) strategic goal for a significant reduction in injuries, occupational illnesses, and their related costs.

Injured Worker/Light Duty Placement Program

The Injured/Illness Worker Placement Program is a proven cost effective organization within Puget Sound Naval Shipyard. This program controls and manages injured employees eligible for FECA (Federal Employees Compensation Act). Injured employees are placed into light duty positions and perform a variety of value added work for PSNS, vice being sent home with FECA payments. The program manager works closely with HRO, Safety and the Production Shops to coordinate the requirements and usage of injured employees in areas most beneficial to the Shipyard, and is also beneficial to the injured employees. In addition, this program actively manages/monitors employees home on FECA compensation. Savings of approximately \$ 6.6 million in fiscal year 1998 and \$7.7 million in fiscal year 1999 have been attributed to this program. The Shipyard can expect a continuance of savings of this magnitude in the future.

Marine Corps Best Business Practices

Activity Based Costing

Marine Corps Logistics Bases has established an Integrated Product Team (IPT) with the mission of implementing Activity Based Costing (ABC) within the Command. ABC is an analytical tool which enables the organization to clearly identify costs associated with specific production and administrative activities within the Command. ABC will allow the Command to focus on activities, which, are high cost drivers and identify opportunities to improve efficiency and effectiveness, as well as reduce non-value added activities. The ABC modeling efforts are currently conducted annually with plans to move to quarterly modeling in FY00 towards implementation of an Activity Based Management concept. The analysis of ABC data results in observations, which become candidates for Business Process Improvement. The Marine Corps Logistics Bases ABC

Program, which currently focuses on the Maintenance Centers, is in consonance with the Headquarters Marine Corps ABC effort which is focusing on Marine Corps Bases and Air Stations.

Budget Process Improvement

Marine Corps Logistics Bases has chartered an Integrated Product Team (IPT) to analyze the Command's budget development process. This team is chartered to develop the requirements for a "to-be" process, which improves, automates, and integrates the Depot Maintenance Activity Group (DMAG) budget formulation and execution reporting process. This process will be integrated with, and support the Planning Programming and Budgeting System (PPBS). Integral to this effort is the need to improve the preparation of Program Objective Memorandum (POM), budget estimates, and the execution of budgetary programs supporting our customers.

Business Process Improvement

Marine Corps Logistics Bases has chartered an Integrated Product Team (IPT) for oversight and implementation of business process improvements. Cross-functional IPTs with representation from all process stakeholders are formed, chartered, and empowered to first analyze the existing, or "as is" processes, and then design and develop proposed "to be" re-engineered processes. This methodology simultaneously takes advantage of cross-functional subject matter expertise and produces an acceptable product the first time. The first focus area is the planning and scheduling process supporting the Depot Maintenance Advisory Group workload. Additional workgroups will be formed to improve parts availability, customer management, process engineering, information flow, and performance measurement.

Cost as an independent variable (CAIV)

CAIV is a methodology for reducing total ownership costs that entails setting aggressive, realistic cost objectives and managing those objectives while meeting war fighters requirements. CAIV is being used by Marine Corps Logistics Bases integrated product teams throughout the life cycle of a weapon system. Analysis is continuously performed to improve processes and activities, and to identify and eliminate, non-value added and deficient cost-to-benefit processes and activities.

Defense Contract Audit Agency (DCAA) Certification

Marine Corps Logistics Bases is developing and implementing written policies as well as procedural guidance to ensure compliance with DCAA Cost Accounting Standards. An IPT has been chartered with the mission of achieving DCAA Certification for the financial systems of Maintenance Center Albany, GA and Maintenance Center Barstow, CA. The IPT is working aggressively with DCAA, the Defense Finance and Accounting Service (DFAS), and Base personnel to correct deficiencies which were identified during the DCAA preliminary compliance review. Certification will allow the Maintenance Centers to achieve cost comparability with the private sector for public/private competition.

Earned Value Measurement

Marine Corps Logistics Bases is implementing an enterprise-wide Earned Value Measurement System (EVMS). Earned Value is a program management technique that relates resource planning to schedules and technical requirements. An Integrated Process Team (IPT) ensures that all program efforts are planned, budgeted and scheduled in time-phased "planning packages" which constitute program management baselines. Progress can be measured against the baselines to provide management with in-process indicators of program health. The EVMS gives program managers visibility into technical, cost, and schedule progress for their respective programs. For all major weapon systems' rework and modification programs, a comprehensive form of EVM will be applied. Other maintenance lines will be measured using a simpler form of earned value referred to as EVM-Light which uses the overall concepts of EVM for lines which may not have complete manufacturing bills of materiel and work breakdown structures. This is typical of smaller lines with one or two items and short turn-around times. The IPT is working closely with the Defense Contract Management Center, the DoD Executive Agent for EVM, to achieve compliance.

Process Standards

Marine Corps Logistics Bases is developing, and implementing process standards for the Maintenance Centers major production lines. The standards document shop floor work processes, activities, tasks, and the materiel, tools, and safety instructions required to complete each process. The engineering team works with Maintenance Centers Albany, GA and Barstow, CA to standardize the processes, validate the accuracy of the steps from technical manuals with artisans and mechanics on the shop floor, and determine the standard labor hours for each task. The process standards are being developing in cooperation with Marine Corps Logistics Bases ongoing ISO 9002 implementation to insure all standards are kept current and rigorous configuration management is applied to their distribution and use.

International Standards Organization (ISO) 9000 Qualification

ISO 9000 is a series of five international standards that provide guidance in the development and implementation of an effective quality management system. Marine Corps Logistics Bases is in the process of achieving ISO 9002 qualification for Maintenance Centers Albany, GA and Barstow, CA by working with the Defense Contract Management Command (DCMC), the Executive Agent for DoD ISO 9000 qualification. DCMC is an integral member of the ISO Integrated Product Team. Qualification requires development of a quality manual, procedures, detailed work instructions, and forms management. A system to measure the cost of quality activities, such as inspection and rework, in terms of investment and loss will be implemented. The ISO 9002 effort will establish a uniform quality value chain from weapon system remanufacture or modification through final shipment to the Marine Forces

Manufacturing Resource Planning II

Manufacturing Resource Planning II (MRP II) is a formal, enterprise-wide system that links together a variety of planning functions (business, production, materiel, capacity), master scheduling, supply requisitioning, shop floor control, and performance measurement. Marine Corps Logistics Bases is implementing MRP II across all product

lines, at both Maintenance Center Albany, GA and Maintenance Center Barstow, CA. The MRP II system will be completely integrated with the Earned Value Measurement Systems and will be ISO 9002 compliant. The Marine Corps Logistics Bases have chosen Western Data System's Compass CONTRACT software as the MRP II system. This COTS software system will ensure interoperability and standardization with joint depot maintenance management systems' architecture.